



Welcome to the first European College of Veterinary Public Health Animal Health Economics Course at the University of Liverpool. It is a shame that you can not be here in Liverpool, but hopefully we can all meet at the AGM in Athens.

The organisers would like to thank the ECVPH for providing funding to run this course, and to the all the speakers who have agreed to provide us with their time and expertise.

The aim of this this course is to provide delegates with an understanding of the economics of animal health, to the extent that you will be comfortable performing your own research in this field. We are aiming for all components of Part 1C3 of the syllabus, and selected parts of Part 2 (PM) B2, to be covered.

Within this pack you will provide information on:

- Course logistics
- Course timetable
- Speaker and organiser bios

We look forward to seeing you on Zoom!

Course Logistics

The course will be run entirely through Zoom. An invite containing the Zoom link will be sent to all delegates for each of the sessions. The Zoom sessions will open 15 minutes before each scheduled session.

Please note that the same link will be used for each of the sessions.

In addition, all course times are GMT

Some of the sessions involve group work. To ensure that delegates meet as many delegates outside their own institutes and research fields, the groups have been decided in advance. Details of the groups and group work will be provided during the course. There is no formal assessment of the group work, but discussions about each week's work will be had. This work could form the basis of future research projects together.

If you have any questions about the course or experience any technical difficulties during the course, please contact John Tulloch on jtulloch@liverpool.ac.uk

Course Timetable

Day 1: Thursday 4th of March

Theme: **Animal health economics concepts and ideas:** assessing the impact and burden of disease and health.

9.00-9.15am: Welcome from **Gina Pinchbeck** as University of Liverpool Residency Programme director and introduction of **Jonathan Rushton**.

9.15-9.30am: Each delegate introduces themselves, what experience they have in economics, and what they want to achieve from the course.

9.30-10.15am: **Jonathan Rushton:** What is economics and what are its core concepts?

10.15-10.30am: Comfort break

10.30-11.00am: **Jonathan Rushton:** Setting baselines for economic analyses

Break

2.00-2.30pm: Introduction to group work. Groups pre-assigned by course organisers. Groups introduce and discuss what areas of work may be suitable for the tasks that week.

2.30-3.15pm: **Alex Shaw:** HALYs, QALYs, DALYs

3.15-3.30pm: Comfort Break

3.30-4.15pm: **Alex Shaw:** Impact of zoonoses across species.

4.15- 4.30pm: **Introduction to week 1 group assignment. Delegates free to use Zoom meeting rooms to start discussions**

Day 2: Thursday 11th of March

Theme: **Assessing short and long-time interventions**

9.00-10.00am: **Jonathan Rushton:** Economic assessment of short term changes: Introduction to partial budget analysis

10.00-10.15am: Comfort break

10.15-11.00am: **Jonathan Rushton:** Economic assessment of long term changes: Introduction to discounting and cost benefit analysis

Break

2.00-2.30pm: **Jonathan Rushton:** discussion of the first week's exercises and introduction to week two's exercise

2.30-3.15pm: **William Gilbert:** Assessing Vaccination in a population

3.15-3.30pm: Comfort Break

3.30-4.15pm: **William Gilbert:** Assessing Vaccination in a population

4.15- 4.30pm: **Introduction to week 2 group assignment. Delegates free to use Zoom meeting rooms to start discussions**

Day 3: Thursday 18th of March

Theme: Quantifying risk and uncertainty, and how they relate to epidemiological and economical tools (eg decision tree analysis)

9.00-10.00am: **Jonathan Rushton:** Risk and uncertainty in economics

10.00-10.15am: Comfort break

10.15-11.00am: **Jonathan Rushton:** Assessment of risk in economics: Introduction to sensitivity analysis, decision tree analysis

Break

2.00-2.30pm: **Jonathan Rushton:** Discussion of week two exercise, planning for short communications

2.30-3.15pm: Lian Thomas: Comparing human and animal health approaches to economic analysis

3.15-3.30pm: Comfort Break

3.30-4.15pm: **Lian Thomas:** *ex-ante* Economic analysis of *T. solium* control

4.15- 4.30pm: **Jonathan Rushton and Gina Pinchbeck:** Close the course

After the course

Delegates will be encouraged to develop a short communication/paper to expand on the work that they did in their tasks. Hopefully this can be done in the groups created over the course with the support of course leaders. An example of such a paper would be ([Economic impact of a Salmonella outbreak on a Welsh dairy farm and an estimation of the breakeven point for vaccination - Damaso - 2017 - Veterinary Record Case Reports - Wiley Online Library](#)).

Course organisers will distribute feedback forms to all delegates, so that we can provide information about the course to ECVPH and tailor future courses to the residents needs.

Useful References

- Babo Martins, S. and Rushton, J. (2014) Cost-effectiveness analysis – adding value to animal health, welfare and production assessment. *OIE Revue Scientifique et Technique* 33(3):681-9.
- Gilbert, W., Bellet, C., Blake, D.P., Tomley, F.M., Rushton, J. (2020) Revisiting the economic impacts of *Eimeria* and its control in European intensive broiler systems with a recursive modelling approach. *Front. Vet. Sci.* 7:558182.doi: 10.3389/fvets.2020.558182
- Rushton, J. (2009) *The Economics of Animal Health and Production*. CABI Publishing, Wallingford, UK. Pages 364
 - Please look at Chapter 7 “Economic analysis tools” and Chapter 14 by Alex Shaw on “The economics of zoonoses and their control”
- Shaw A.P.M., Rushton J., Roth F., Torgerson P.R. (2017) DALYs, Dollars and Dogs: how best to analyse the economics of controlling zoonoses. In: *The economics of animal health*, OIE Scientific and Technical Review, Vol. 36 (1):147-161.
- Thomas, L., Bellet, C., Rushton, J. (2018) Using economic and social data to improve veterinary vaccine development. Learning lesson from human vaccinology. *Vaccine* <https://doi.org/10.1016/j.vaccine.2018.10.044>
- Torgerson P.R., Rüegg S., Devleeschauwer B., Abela-Ridder B., Havelaar A.H., Shaw A.P.M., Rushton J. & Speybroeck N.– zDALY: an adjusted indicator to estimate the burden of zoonotic diseases. *One Health*, 2017. doi: 10.1016/j.onehlt.2017.11.003.

Speaker Profiles

Prof Jonathan Rushton

Jonathan Rushton is an agricultural economist who specialises in the economics of animal health and food systems. His principal research interests are the: Global Burden of Animal Diseases (GBADs) where he directs a global programme with OIE (<https://animalhealthmetrics.org>); economics of antimicrobial use and resistance in livestock; and assessment of the multidimensionality of food quality and public health. He has recently completed studies on the economics of antimicrobial use in livestock in SE Asia for FAO and the economics of new livestock vaccines for the EU funded SAPHIR project and is currently involved in research on antimicrobial use in livestock in Vietnam (VIPARC), India (DARPI) and the EU (ROADMAP). He is working with IIAD on the economic dimensions of sustainable laboratory systems, a project funded by OIE. Jonathan embraces One Health approaches in the search for solutions to society's health problems.



Jonathan is professor of animal health and food systems economics at the Institute of Infection, Veterinary and Ecological Sciences, University of Liverpool, leads a University Centre of Excellence for Sustainable Food Systems (<https://www.liverpool.ac.uk/centre-for-sustainable-food-systems/>) and is part of the N8 Agrifood programme (<http://www.n8research.org.uk>). He is also adjunct Professor in the School of Behavioural, Cognitive & Social Sciences of the University of New England, Australia and president of the International Society for Economics and Social Sciences of Animal Health (<http://www.isessah.com>). In 2020 he became a Senior Fellow at the Institute for Infectious Animal Diseases (IIAD) Texas A&M, USA.

Professor Alexandra Shaw

Following her economics degree, Alex Shaw started her career at the Ministry of Economic Planning of the then North-Central state of Nigeria. Her portfolio included agriculture and livestock projects and through this she met Dr Peter Ellis, who was visiting Nigeria. She joined his Veterinary Epidemiology and Economics Research Unit (VEERU) at Reading University, where Professor Jonathan Rushton also started his career. VEERU was pioneering the new sub-discipline of animal health economics. Alex returned to Nigeria with a team evaluating its tsetse control programme, then developed this theme in Mali and based her PhD on it. She has worked as an independent consultant in over twenty African countries, teaching livestock economics, undertaking project evaluations and research while continuing to work on all aspects of trypanosomiasis control, including consultancies for WHO on sleeping sickness. She has increasingly focussed on other diseases affecting both people and animals. She developed the concept of neglected zoonotic diseases for WHO/DFID for those endemic zoonoses, mostly already controlled in Europe and North America, which primarily affect poor and marginalised populations and their livestock. Her main research interest since then



has been finding ways of evaluating the dual burden these zoonotic diseases pose. Alex is an honorary professor at the University of Liverpool

Dr Lian Thomas

I am a veterinarian and epidemiologist working at the Institute of Infection, Veterinary & Ecological Sciences ([IVES](#)), University of Liverpool and the International Livestock Research Institute ([ILRI](#)) in Nairobi. I currently lead a theme on Neglected Zoonotic Diseases within the [BMZ](#) funded [One Health Research, Education and Outreach Centre in Africa](#) hosted at ILRI. I am a [Soulsby Foundation](#) One Health Fellow and hold a Wellcome Trust-University of Liverpool [Institutional strategic support fund](#) post-doctoral fellowship. Over the last 15 years I have worked and lived in Uganda, Grenada (WI), Kenya, Laos PDR, Zimbabwe & Zambia, spending time both within academia and as an independent consultant on projects for the [World Health Organisation](#), [Australian Animal Health Laboratories](#), and ILRI. My research can be found on Research Gate https://www.researchgate.net/profile/Lian_Thomas2



Dr William Gilbert

William Gilbert is a researcher at the University of Liverpool, specialising in the epidemiology and economics of livestock disease. Originally training in Genetics at University College London, he completed a Master's degree and PhD at the Royal Veterinary College in London. His most recent projects have included the economic analysis of veterinary vaccine use in the EU as part of the Horizon 2020 programme, a cost-benefit analysis of preparing for animal health emergencies with the OIE, and the Global Burden of Animal Disease initiative supported by the Bill and Melinda Gates Foundation.



Organisator Profiles

Dr Gina Pinchbeck

I graduated in Veterinary Science from Liverpool University in 1993. After some time in veterinary practice I completed a training scholarship in equine medicine and surgery at University of Glasgow and obtained the Royal College Certificate in Equine Surgery (Orthopaedics) in 1998. I then completed a PhD in Epidemiology at Liverpool University followed by a lectureship post in Veterinary Epidemiology at Massey University in New Zealand before returning to Liverpool. I am a Reader in Veterinary Epidemiology at the University of Liverpool. I am a Diplomate of the European College of Veterinary Public Health and the University of Liverpool ECVPH Residency Programme Director.



Dr John Tulloch

I graduated in Veterinary Medicine (Royal Veterinary College), followed by a Dairy Internship at Michigan State University. Subsequently I worked in livestock practice in the West-Country, before working as a consultant at an international pharmaceutical company. During this time I completed a Diploma in Ruminant Nutrition (Harper Adams University) and a Masters in Veterinary Epidemiology and Public Health (Royal Veterinary College). I obtained my PhD at the University of Liverpool as part of the NIHR Health Protection Research Unit in Emerging and Zoonotic Infections.

I am currently a Tenure Track Fellow in the Department of Livestock and One Health in the Institute of Infection, Veterinary and Ecological Sciences, University of Liverpool. I hold honorary epidemiologist positions at Public Health England and Liverpool City Council. My research interests involve using epidemiological methods to understand how animals impact human health and society, in particular zoonotic injuries and infections. I am also a Resident of the European College of Veterinary Public Health.

